Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the specification:

Listing of Claims:

1. A method to treat, prevent or ameliorate pathological conditions associated with dysregulation of the insulin signaling pathway comprising administering to a subject in need thereof an effective amount of a modulator of a protein selected from the group consisting of those disclosed in Table 4 or Table 5.

2. The method of claim 1 wherein said condition is Type 11 diabetes.

3. The method of claim 1 wherein said condition is the Type A syndrome of insulin resistance.

4. The method of claim 1 wherein said modulator inhibits the biochemical function of said protein in said subject.

5. The method of claim 4 wherein said modulator comprises one or more antibodies to said protein, or fragments thereof, wherein said antibodies or fragments thereof can inhibit the biochemical function of said protein in said subject.

6. The method of claim 1 wherein said modulator enhances the biochemical function of said protein in said subject.

7. The method of claim 1 wherein said modulator inhibits gene expression of said protein in said subject.

8. The method of claim 7 wherein said modulator comprises any one or more substances selected from the group consisting of antisense oligonucleotides, triple helix DNA, ribozymes, RNA aptamers, siRNA, double stranded RNA and single stranded RNA wherein said substances are designed to inhibit gene expression of said protein.

9. The method of claim 1 wherein said modulator enhances the gene expression of said protein in said subject.

10. A method to treat, prevent or ameliorate pathological conditions associated with dysregulation of the insulin signaling pathway comprising administering to a subject in need thereof a pharmaceutical composition comprising an effective amount of a modulator of a protein selected from the group consisting of those disclosed in Table 4 or Table 5.

11. The method of claim 10 wherein said condition is Type II diabetes.

12. The method of claim 10 wherein said condition is the Type A syndrome of insulin resistance.

13. The method of claim 10 wherein said modulator inhibits the biochemical function of said protein in said subject.

14. The method of claim 13 wherein said modulator comprises one or more antibodies to said protein, or fragments thereof, wherein said antibodies or fragments thereof can inhibit the biochemical function of said protein.

15. The method of claim 10 wherein said modulator enhances the biochemical function of said protein in said subject

16. The method of claim 10 wherein said modulator inhibits gene expression of said protein in said subject.

17. The method of claim 16 wherein said modulator comprises any one or more substances selected from the group consisting of antisense oligonucleotides, triple helix DNA, ribozymes, RNA aptamers, siRNAr double stranded RNA and single stranded RNA wherein said substances are designed to inhibit gene expression of said protein.

18. The method of claim 10 wherein said modulator enhances gene expression of said protein in said subject.

19. A method to identify modulators useful to treat, prevent or ameliorate pathological conditions associated with dysregulation of the insulin signaling pathway comprising assaying for the ability of a candidate modulator to modulate the biochemical function of a protein selected from the group consisting of those disclosed in Table 4 or Table 5.

20. The method of claim t 9 wherein said method further comprises assaying for the ability of an identified modulator to reverse the pathological effects observed in animal models of said conditions.

21. The method of claim 19 wherein said method further comprises assaying for the ability of an identified modulator to reverse the pathological effects observed in clinical studies with subjects with said conditions.

22. The method according to claim 19 wherein said condition is Type II diabetes.

23. The method according to claim 19 wherein said condition is the Type A syndrome of insulin resistance.

24. A method to identify modulators useful to treat, prevent or ameliorate pathological conditions associated with dysregulation of the insulin signaling pathway comprising assaying for the ability of a candidate modulator to modulate gene expression of a protein selected from the group consisting of those disclosed in Table 4 or Table 5.

25. The method according to claim 24 wherein said method further comprises assaying for the ability of an identified inhibitory modulator to reverse the pathological effects observed in animal models of said condition.

26. The method according to claim 24 wherein said method further comprises assaying for the ability of an identified inhibitory modulator to reverse the pathological effects observed in clinical studies with subjects with said condition.

27. The method according to claim 24 wherein said condition is Type II diabetes.

28. The method according to claim 24 wherein said condition Is the Type A syndrome of insulin resistance.

29. A pharmaceutical composition comprising a modulator to a protein selected from the group consisting of those disclosed in Table 4 or Table 5 in an amount effective to treat, prevent or ameliorate pathological conditions associated with dysregulation of the insulin signaling pathway in a subject in need thereof.

30. The pharmaceutical composition according to claim 29 wherein said condition is Type II diabetes.

31. The pharmaceutical composition according to claim 29 wherein said condition is the Type A syndrome of insulin resistance.

32. The pharmaceutical composition according to claim 29 wherein said modulator inhibits the biochemical function of said protein.

33. The pharmaceutical composition of claim 29 wherein said modulator comprises one or more antibodies to said protein, or fragments thereof, wherein said antibodies or fragments thereof can inhibit the biochemical function of said protein.

34. The pharmaceutical composition according to claim 29 wherein said modulator enhances the biochemical function of said protein.

35. The pharmaceutical composition according to claim 29 wherein said modulator inhibits gene expression of said protein.

36. The pharmaceutical composition of claim 29 wherein said modulator comprises any one or more substances selected from the group consisting of antisense oligonucleotides, triple helix DNA, ribozymes, RNA aptamer, siRNA, double stranded RNA and single stranded RNA wherein said substances are designed to inhibit gene expression of said protein.

37. The pharmaceutical composition according to claim 25 wherein said modulator enhances gene expression.of said protein.

38. A method to diagnose subjects suffering from pathological conditions associated with dysregulation of the insulin signaling pathway who may be suitable candidates for treatment with modulators to a protein selected from the group consisting of those disclosed in Table 4 or Table 5 comprising assaying mRNA levels of any one or more of said proteins in a biological sample from said subject wherein subjects with altered levels compared to controls would be suitable candidates for modulator treatment.

39. A method to diagnose subjects suffering from pathological conditions associated with dysregulation of the insulin signaling pathway who may be suitable candidates for treatment with modulators to a protein selected from the group consisting of those disclosed in Table 4 or Table 5 comprising detecting levels of any one or more of said proteins in a biological sample from said subject wherein subjects with altered levels compared to controls would be suitable candidates for modulator treatment.

40. A method to treat, prevent or ameliorate a pathological condition associated with dysregulation of the insulin signaling pathway comprising:
    (a) assaying for mRNA levels of a protein selected from the group consisting of those disclosed in Table 4 or Table Sin a subject; and,
    (b) administering to a subject with altered levels of mRNA of said protein compared to controls a modulator to said protein in an amount sufficient to treat, prevent or ameliorate the pathological effects of said condition.

41. The method of claim 40 wherein said condition is Type II diabetes.

42. The method of claim 40 wherein said condition is the Type A syndrome of insulin resistance.

43. The method of claim 40 wherein said modulator enhances the gene expression of said protein.

44. The method of claim 40 wherein said modulator inhibits the gene expression of said protein.

45. A method to treat, prevent or ameliorate a pathological condition associated with dysregulation of the insulin signaling pathway comprising:
    (a) assaying for levels of a protein selected from the group consisting of those disclosed in Table 4 or Table Sin a subject; and,
    (b) administering to a subject with altered levels of said protein compared to controls a modulator to said protein in an amount sufficient to treat, prevent or ameliorate the pathological effects of said condition.

46. The method of claim 45 wherein said condition is Type II diabetes.

47. The method of claim 45 wherein said condition is the Type A syndrome of insulin resistance.

48. The method of claim 45 wherein said modulator enhances the biochemical function of said protein.

49. The method of claim 45 wherein said modulator inhibits the biochemical function of said protein.

50. A diagnostic kit for detecting mRNA levels of a protein selected from the group consisting of those disclosed in Table 4 or Table 5 in a biological sample, said kit comprising:
    (a) a polynucleotide of a polypeptide set forth in Table 4, Table 5 or fragments thereof;
    (b) a nucleotide sequence complementary to that of (a);
    (c) a polypeptide of Table 4 or Table 5 of the present invention encoded by the polynucleotide of (a),
    (d) an antibody to the polypeptide of (c)
    (e) an RNAi sequence complementary to that of (a) wherein components (a), (b), (c), (d) or (e may comprise a substantial component.

51. A diagnostic kit for detecting levels of a protein selected from the group consisting of those disclosed in Table 4 or Table 5 in a biological sample, said kit comprising:
    (a) a polynucleotide of a polypeptide set forth in Table 4, Table 5 or fragments thereof;
    (b) a nucleotide sequence complementary to that of (a);
    (c) a polypeptide of Table 4 or Table 5 of the present invention encoded by the polynucleotide of (a),
    (d) an antibody to the polypeptide of (c)
    (e) an RNAi sequence complementary to that of (a) wherein components (a), (b), (c), (d) or (e) may comprise a substantial component.

52. A method to identify genetic modifiers of the insulin signaling pathway, said method comprising
    (a) providing a transgenic fly whose genome comprises a DNA sequence encoding a polypeptide comprising $Dp110^{D954A}$. , said DNA sequence operably linked to a tissue specific control sequence, and expressing said DNA sequence, wherein expression of said DNA sequence results in said fly displaying a transgenic phenotype;
    (b) crossing said transgenic fly with a fly containing a mutation in a known or predicted gene; and
    (c) screening progeny of said crosses for flies that carry said DNA sequence and said mutation and display modified expression of the transgenic phenotype as compared to controls.

53. The method of claim 52 wherein said DNA sequence encodes $Dp110^{D954A}$ and wherein said tissue specific expression control sequence comprises the eye specific enhancer, ey-Gal4. .

54. The method of claim 53 wherein expression of said DNA sequence results in said fly displaying the "small eye" phenotype.

55. A method to identify targets for the development of therapeutics to treat, prevent or ameliorate pathological conditions associated with dysregulation of the insulin signaling pathway said method comprising identifying the human homologs of the genetic modifiers identified according to the method of claim 52.

56. The method of claim 55 wherein said condition is Type II diabetes.

57. The method of claim 55 wherein said condition is the Type A syndrome of insulin resistance.